Tool: Cost-Benefit Analysis

WHAT IT IS	A tool to estimate the real cost and benefits for a solution under consideration.
WHEN TO USE IT	During the design phase to demonstrate whether a design alternative is practical from the cost point of view, to help choose a solution by making comparisons, and to uncover benefits and costs associated with a design alternative that are not evident.
HOW TO USE IT	The analysis involves calculating or estimating the known costs and potential benefits associated with a proposed alternative. Costs are those costs associated with implementing the alternative. Benefits are those associated with implementation of the alternative that will result in savings for the organization, like increased productivity, elimination of positions, reduced man-hours, or less rework. This often requires making assumptions (for example, that the proposed solution will result in a 25% improvement in productivity or will speed up the process by 50%) so that dollar figures can be assigned to each cost or benefit. Some “costs” or benefits do not lend themselves to quantitative evaluation (e.g., lowered morale as a cost or improved morale as a benefit). In these cases, the comparison will need to done on the basis of qualitative information.

An example of a Cost-Benefit Analysis follows:

A design team was looking at a design solution to see if it was practical from the cost point of view. The organization involved published documents and had to do a lot of rework due to printing errors. One solution involved buying new equipment at the cost of $100,000.

The team did a cost-benefit analysis—considering all the costs associated with getting the new equipment up and running—to find out if the alternative was cost-effective. Their work is shown below.

SAMPLE COST-BENEFIT ANALYSIS

Costs

Equipment	$100,000
Rewiring and installation	50,000
Cost of retraining operators	25,000
Cost of lost production	50,000
Total Cost	$225,000

Benefits – Year 1

Reduce rejects by 10%	$75,000
Reduce man-hours for the job	50,000
Reduce startup time	25,000
Total Benefits	$150,000

Comparing the costs and benefits over 2 years shows:

	Costs	Benefits	Profit/Loss
Year 1	$225,000	$150,000	($ 75,000)
Year 2	—	150,000	150,000
Total	$225,000	$300,000	$ 75,000

In 2 years, the new equipment will pay back its original cost and generate additional income.